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1: Int Rev Immunol. 1994;11(2):133-41. Related Articles, Links

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Related Resources

Hybrid Ty virus-like particles.

Adams SE, Burns NR, Layton GT, Kingsman AJ.

British Bio-technology Ltd., Oxford, U.K.

Vaccines need to activate antigen presenting cells, overcome genetic restriction in T-cell responses and elicit both T and B memory cells. In order to produce recombinant vaccines which can do this, considerable effort has been put into developing particulate antigen presentation systems to generate polyvalent, high molecular weight antigens which should maximally stimulate the immune system. One such antigen-carrier system is based on the ability of a protein encoded by the yeast retrotransposon, Ty, to self-assemble into virus-like particles (VLPs). Ty-fusion proteins retain this ability to form particles and a range of hybrid VLPs carrying a variety of heterologous antigens have been produced and shown to elicit potent immune responses. Hybrid VLPs carrying human immunodeficiency virus (HIV) antigens stimulate the three main components of the immune system, namely antibody synthesis, T-cell proliferative responses and cytotoxic T-lymphocyte (CTL) responses.

Publication Types:
- Review
- Review, Tutorial

PMID: 8046274 [PubMed - indexed for MEDLINE]

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1: Eur J Immunol. 1996 Nov;26(11):2595-600. Related Articles, Links

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Dendritic cells process exogenous viral proteins and virus-like particles for class I presentation to CD8+ cytotoxic T lymphocytes.

Bachmann MF, Lutz MB, Layton GT, Harris SJ, Fehr T, Rescigno M, Ricciardi-Castagnoli P.

Department of Pathology, University of Zurich, Switzerland.

Previous reports have indicated that both dendritic cells and macrophages have the ability to induce cytotoxic T lymphocyte (CTL) and T helper (Th) cell responses in vivo. Dendritic cells process exogenous antigens conventionally for presentation on major histocompatibility complex (MHC) class II molecules. However, unconventional processing of exogenous antigens in vitro for presentation on MHC class I molecules is still an open question. In this study, we report that a cloned dendritic cell line (D2SC/1) is able to present cell debris-associated exogenous viral proteins to MHC class I-restricted CTL in vitro. The dendritic cell line was very efficient in processing recombinant lymphocytic choriomeningitis virus nucleoprotein (LCMV NP) and presenting the class I-restricted epitope to CTL primed in vivo. Peritoneal macrophages could also process the recombinant LCMV NP for subsequent MHC class I presentation, but were less efficient compared to the dendritic cells. Furthermore, recombinant yeast-derived virus-like particles carrying the HIV-1 V3 loop (V3-VLP), which are protenaceous and do not contain any lipid, were also found to be efficiently processed by the dendritic cell line for presentation of the class I-restricted epitope. These results clearly indicate that viral proteins, in particulate form or associated with cell debris, are processed by dendritic cells for CTL induction.

PMID: 8921944 [PubMed - indexed for MEDLINE]